

Appl. No. 09/706,926

Amdt. dated June 16, 2004

Request for continued examination following final Office action of March 5, 2004

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for representing cartographic data in a computer-based system, comprising:

computing a plurality of wavelet and scaling coefficients corresponding to at least one function representing a geographic feature in a cartographic database, wherein said wavelet coefficients obtained with a wavelet, wherein said wavelet being one of a family of functions

having a form $\psi_{ab}(x) = |a|^{-1/2} \psi\left(\frac{x-b}{a}\right)$; and

storing the wavelet and scaling coefficients in a computer-usable database, the coefficients being usable for representing the cartographic data in the computer-based system.

Claim 2 (original): The method of claim 1, wherein the geographic feature is originally represented by a plurality of data points.

Claim 3 (original): The method of claim 2, wherein the data points are selected from the group consisting of coordinate pairs and a coordinate triples.

Claim 4 (original): The method of claim 1, wherein the geographic feature is the boundary of a feature selected from the group consisting of a road, waterway, building, park, lake, railroad track, and airport.

Claim 5 (original): The method of claim 2, wherein the step of computing the wavelet coefficients and scaling coefficients includes applying a wavelet transform to a function defined by the data points representing the geographic feature.

Claim 6 (original): The method of claim 1, wherein the step of computing the wavelet coefficients and scaling coefficients includes:

computing the wavelet coefficients by performing a least-squares fit.

Claim 7 (original): The method of claim 1, wherein the wavelet and scaling coefficients are computed using a semi-discrete orthonormal wavelet transform.

Claim 8 (currently amended): A method of displaying on a computer output device a function representing a geographic feature, comprising:

retrieving from a computer-usable database a plurality of wavelet and scaling coefficients associated with the geographic feature, wherein a wavelet being one of a family of functions having a form $\psi_{ab}(x) = |a|^{-1/2} \psi\left(\frac{x-b}{a}\right)$, the coefficients being derived from a

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plurality of data points specifying geographic locations according to a predetermined reference system;

computing the function representing the geographic feature using the retrieved wavelet and scaling coefficients; and

displaying the function on the computer output device.

Claim 9 (original): The method of claim 8, wherein the data points are selected from the group consisting of coordinate pairs and a coordinate triples.

Claim 10 (original): The method of claim 8, wherein the geographic feature is selected from the group consisting of a road, waterway, building, park, lake, railroad track, and airport.

Claim 11 (currently amended): A system for displaying on a computer output device a representation of a geographic feature, comprising:

a database storing a plurality of wavelet and scaling coefficients associated with the geographic feature, wherein a wavelet being one of a family of functions having a form

$$\psi_{ab}(x) = |a|^{-1/2} \psi\left(\frac{x-b}{a}\right),$$

the wavelet and scaling coefficients being derived from a plurality of data points specifying geographic locations according to a predetermined reference system;

a processor configured to calculate a function using the wavelet and scaling coefficients, the function representing the geographic feature; and

a display device for displaying the function.

Claim 12 (original): The system of claim 11, wherein the data points are selected from a group consisting of coordinate pairs and coordinate triples.

Claim 13 (currently amended): A method of generating a computer-usable database that represents cartographic data using a plurality of wavelet and scaling coefficients, comprising:

providing a predetermined database that represents the cartographic data using a plurality of data points specifying geographic locations;

computing a plurality of wavelet and scaling coefficients from the data points, wherein a wavelet being one of a family of functions having a form $\psi_{ab}(x) = |a|^{-1/2} \psi\left(\frac{x-b}{a}\right),$

wherein said wavelet and scaling coefficients are used to represent the cartographic data; and storing the wavelet and scaling coefficients in the computer-usable database.

Claim 14 (original): The method of claim 13, wherein the data points are selected from the group consisting of coordinate pairs and coordinate triples.

Claim 15 (original): The method of claim 13, wherein the geographic feature is the boundary of a feature selected from the group consisting of a road, waterway, building, park, lake, railroad track and airport.

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Claim 16 (currently amended): A system of generating a computer-usable database that represents cartographic data using a plurality of wavelet and scaling coefficients, comprising:

a first computer-usable database storing the cartographic data representing using a plurality of data points specifying geographic locations;

a processor configured to compute a plurality of wavelet and scaling coefficients from the data points, wherein said wavelet and scaling coefficients are used to represent the cartographic data, wherein a wavelet being one of a family of functions having a form

$$\psi_{ab}(x) = |a|^{-1/2} \psi\left(\frac{x-b}{a}\right); \text{ and}$$

a second computer-usable database, operatively coupled to the processor, for storing the wavelet and scaling coefficients.

Claim 17 (original): The system of claim 16, wherein the data points are selected from the group consisting of coordinate triples and coordinate pairs.

Claim 18 (original): The system of claim 16, wherein the wavelet coefficients and scaling coefficients are computed by applying a wavelet transform to a function defined by the data points representing a geographic feature.

Claim 19 (original): The system of claim 16, wherein the wavelet coefficients are computed by performing a least-squares fit.

Claim 20 (currently amended): A method for generating a database error metric in a computer-based system, comprising:

computing a first plurality of wavelet and scaling coefficients from a plurality of first data points included in a first cartographic database, wherein said wavelet and scaling coefficients represent geographic features;

computing a second plurality of wavelet and scaling coefficients from a plurality of data points included in a second cartographic database, wherein said wavelet and scaling coefficients represent geographic features, wherein a wavelet being one of a family of

functions having a form $\psi_{ab}(x) = |a|^{-1/2} \psi\left(\frac{x-b}{a}\right); \text{ and}$

generating the database error metric based on a wavelet transform involving the first and second pluralities of wavelet coefficients.

Claim 21 (original): The method of claim 20, wherein the error metric is a total error metric based on a plurality of wavelet scales.

Claim 22 (original): The method of claim 20, further comprising:

selecting a wavelet scale; and

restricting the error computation to the selected wavelet scale to generate a layer error metric.

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Claim 23 (previously presented): The method of claim 20, wherein the data points are selected from the group consisting of coordinate pairs and coordinate triples.

Claim 24 (currently amended): A system for generating a database error metric, comprising:
a first cartographic database for storing a first plurality of data points;
a second cartographic database for storing a second plurality of data points; and
a processor, operatively coupled to the first and second cartographic databases,
configured to compute a first plurality of wavelet and scaling coefficients and a second
plurality of wavelet and scaling coefficients, respectively, from the first and second pluralities
of data points, wherein said wavelet and scaling coefficients represent geographic features,
wherein a wavelet being one of a family of functions having a form

$$\psi_{ab}(x) = |a|^{-1/2} \psi\left(\frac{x-b}{a}\right),$$

the processor generating a database error metric based on the first
and second pluralities of wavelet and scaling coefficients.

Claim 25 (previously presented): The system of claim 24, wherein the error metric is a total
error metric based on a plurality of wavelet scales.

Claim 26 (original): The system of claim 24, wherein the processor is configured to restrict
the error computation to a selected wavelet scale to generate a layer error metric.

Claim 27 (original): The system of claim 24, wherein the data points are selected from the
group consisting of coordinate triples and coordinate pairs.